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Review Article

Understanding Alcohol and Drug Problems in the Elderly: What to Look For and How to Help

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Abstract

The use of alcohol, tobacco products, and various classes of prescription drugs (e.g., opioids, stimulants, and benzodiazepines) are common among older adults. Projections from the US and Europe estimate the number of older adults with substance problems in need of treatment will more than double over the next few years. There is a need for practitioners to identify substance misuse and problems among the elderly and to enhance their care responses to this growing health concern. The purpose of this paper is to highlight some of the factors that may influence the use and progression into further involvement with alcohol and drugs among the elderly and recommend what we can do as care providers that may help mitigate both the immediate and long-term substance use involvement among seniors. Misuse and progression to substance use disorders can be influenced by individual-level susceptibility (e.g., physiological changes and genetic vulnerability), properties of the substance (e.g., reinforcing properties), and social environmental factors (e.g., prescribing practices). Practitioners should ask all elderly patients about their substance use as well as the context in which they are using to prevent further involvement and the emergence of problems related to use. Assessment and inquiry should be followed by education, counseling, and support as indicated. Given the likely impact of substance use problems in older people on social and healthcare services, as well as on their own quality of life, there is a need for better education, recognition, and care plans to curb and prevent the emergence of substance use problems in older adults.

Keywords: Alcohol; Drugs; Older Adults; Aging; Abuse

Abbreviations:

SUD: Substance Use Disorder

Substance use at any age can lead to serious problems and/or addiction. The use of alcohol, tobacco products, and various classes of prescription drugs (e.g., opioids, stimulants, and benzodiazepines) are common among older adults [1-4]. Projections from the US and Europe estimate the number of older adults with substance problems in need of treatment will more than double over the next few years [5-7]. The number of individuals aged 50 or older in the U.S. with past year substance use disorder (SUD) is projected to be 5.7 million by 2020 [8]. Thus there is an emerging need for practitioners to identify situations that may increase the risk of substance misuse and problems among their clients as

well as a need to identify individuals in need of help. Practitioners are more likely to be attuned to the physical health problems of older populations, ignoring the signs and symptoms of misuse of substances and SUD. Even alcohol use can be especially problematic for the elderly. Alcohol, medical problems, and prescription medications are likely combinations in the elderly, putting seniors at risk for problems resulting from combined effects.

The purpose of this paper is to increase understanding of the factors that may influence the use and progression alcohol and drug misuse among the elderly. Recommendations for

screening follow up treatment, and age specific considerations for care providers are offered to mitigate both the immediate and long-term substance use involvement among seniors. The paper begins with a discussion highlighting factors grouped into three categories: individual-level susceptibility (e.g., physiological changes and genetic vulnerability), properties of the substance (e.g., reinforcing properties), and social environmental factors (e.g., prescribing practices), followed by suggestions to implement in practice related to detection and care of this vulnerable population.

Individual Level Susceptibility and Involvement with Substances

Many potential personal risk factors for substance use and progression to SUDs among older adults are similar to those found in the general population. There is substantial evidence that family history and genetics are important in the development of SUDs throughout the lifespan [9,10]. Genes involved in vulnerability to SUDs include those that alter drug metabolism or the function of a drug receptor as well as those involved in general mechanisms of modulating stress response, emotion, and behavioral control [11]. Twin studies indicate that there is both a substantial heritability of substance-specific addictions (highest for opiates and cocaine) and a genetic overlap across addiction to different substances [12]. Heritable factors appear to be more important among adults than among youth, possibly because of an accumulation of genetic influences overtime, as well greater flexibility as one age to create and choose environments that may interact with or promote one's genetic predisposition [10].

Individuals who initiate substance use in early adolescence (often termed early onset users) may be most vulnerable to negative consequences throughout the life course [13,14]. In terms of alcohol problems, studies have identified two types of problems users – long-term abusers with early onset abuse and late-onset abusers (onset after age 50) [15,16]. Early onset abusers tend to have a greater family history of alcoholism [17,18], while late-onset abusers are suspected of developing drinking problems as a reaction to life changes resulting from aging, such as the loss of social support [19,20]. Early onset abusers are the more common pattern of alcohol abuse among the elderly. However, studies have found that approximately one-third or more of the elderly with drinking problems developed these problems in old age or have a recurrence of problems after a lengthy interval of remission [20,21].

In general, studies indicate that older men are much more likely than older women to have alcohol-related problems [22], but older women have been found to be at greater risk for prescription drug abuse [23]. One may self-medicate to diminish physical or mental health symptoms, such as pain, anxiety, and low mood [24]. Protective factors that reduce the risk of substance misuse and subsequent potential problems related to the use have not been studied in depth among older populations, but those found among younger populations [25,26] may also be relevant to this age group

and require further study. Never using alcohol or tobacco, being married, and attending religious services regularly are potential factors that protect against substance use and progression to problematic use among the elderly [7,27].

Older adults also have some unique factors that may make them more vulnerable to substance misuse attributed to the aging process as well as chronic health problems and disabilities [28]. The ageing process, in particular, affects neurotransmitter systems (predominantly dopaminergic, serotonergic, and glutamatergic systems) and neural circuits involved in both the reward and pain processing systems [22]. Implications of brain changes and age-related pharmacokinetic/dynamic changes among older adults may impact the course of substance use problems. Ageing affects the process by which the substance is absorbed, distributed, metabolized and eliminated by the body. The same amount of alcohol that previously had little effect can now cause intoxication and intensify problems associated with insomnia, incontinence and gastrointestinal problems among older adults. Prescribed medications can interact with psychoactive substances and chronic medical or psychological conditions can be triggered or worsened by substance use.

Properties of Psychoactive Substances Associated with Substance Involvement

Properties of psychoactive substances also influence the appeal and quantity of use. Psychoactive substances alter neurochemical activity and after crossing the blood-brain barrier, these substances act primarily on the central nervous system affecting brain function, altering perceptions, mood, consciousness, cognition, and behavior. Evidence from animal models indicates that expression of the effects may become more prominent in older individuals ([29,30]. Reinforcing effects (e.g., euphoria, alertness) may encourage sustained use, which escalates in frequency and quantity as tolerance develops. For example, regular drinkers generally are able to tolerate larger amounts of alcohol on repeated use and may need to consume more to produce the same effect. Additionally, sleeping pills and tranquilizers may be particularly suited to misuse as their properties often cause them to be used over a significant period of time despite being recommended by their prescriber for short-term use only during times of stress.

Technologic and pharmacologic innovations may allow the same substance to be administered in various ways [31]. How the substance is used and individual differences both determine how quickly a drug effect occurs, the concentration that reaches its site of action, and the duration of drug action, all of which may influence the substance use progression process. Inhalation, which includes smoking, allows quick absorption by the lungs. Other methods that cross mucus membranes, such as topical applications, provide localized action but may also lead to widespread effects through absorption into the general circulation. Drugs that cross membrane barriers via patches or rectal suppository/enema can provide controlled prolonged effects. Oral ingestion in beverage or tablet/capsule form is probably the most

appealing route of administration to older adults because of the ease of administration. However, this route is less efficient (variable absorption) as the substance must first pass digestive processes and metabolism influences, which tend to produce less predictable plasma levels. Differences in age, gender, nutrition, kidney and liver function, and genetics in addition to substance specific clearance characteristics (half-life) influence degradation and elimination rates.

Negative reactions to alcohol and drugs can increase as one ages. Chronic use of alcohol can cause hypertension. Alcohol is a central nervous system depressant that can cause sleep problems, such as insomnia and sleep apnoea, which become more prominent with advanced age. Alcohol also impairs glycogenesis in the liver, which can result in fat accumulation in hepatic cells. The heart is forced to work harder in response to this as well as the lowering of blood pressure, making drinking among individuals with cardiac conditions problematic. Another concern with alcohol use when one older is its interaction with other medications, either by interfering with the metabolism of the medication or influencing the response to the medication [32]. At all levels of alcohol consumption, upper gastrointestinal bleeding has been found to be increased among aspirin and ibuprofen users [33]. On the other hand, the pattern of alcohol consumption changes the metabolism of drugs commonly used by many elderly. Alcohol consumption can decrease warfarin metabolism causing an increase in anticoagulation, but anticoagulation is decreased with the increase in warfarin metabolism in a chronic alcohol user [32].

The prevalence of pain in older adults is high and opiates are the mainstay of pain treatment. The duration of action varies greatly by the type of opiate (e.g., codeine 4-6 hours – Fentanyl 72 hours per patch) and users taking medications on their own may not be cognizant of differences in short vs long acting formulations. Aging can bring reduction in hepatic blood flow and volume as well as reductions in renal blood flow and glomerular filtration rates which may cause opiates to be more potent and have a longer duration of action than predicted. Opioids that should be avoided in the older patients include meperidine, propoxyphene, and tramadol [34]. Older people are more sensitive than younger people to the central nervous system depressant effects of benzodiazepines and sedative hypnotics [35,36], thus the dosage should be half that taken by someone younger. Caution should be taken in the use of chlordiazepoxide and diazepam in the elderly because of a long half-life and active metabolites. Benzodiazepines may worsen certain breathing problems, can lead to falls in the elderly, and are being linked to increased risk of dementia and Alzheimer's disease [37,38].

Despite the increased use of prescription use of marijuana, virtually nothing is known about the pharmacological and pharmacokinetic effects of cannabis in the elderly. Cocaine on the other hand, has sympathomimetic properties where the use in older individuals can increase adverse effects, such as cardiac arrhythmias, convulsions and stroke.

Many substances used by older adults have a high tendency to induce dependence and are associated with physical harm to the user (propensity to damage organs, change physiological functions, result in illness or death) and serious consequences for families, communities and society (intoxication ramifications, impairment to social life, healthcare costs) [39]. Ageing related changes can elevate the risk for severe neurotoxicity and substance related adverse consequences [22]. Furthermore, the potentiating effect of one substance on another can be considerable (e.g., use of alcohol and nicotine paired with psychoactive substances). However, the effectiveness of one substance may be diminished by the repeated use of another. This usually occurs among substances of the same type but may also occur with drugs that have similar pharmacological effects that are in different categories (cross tolerance or cross dependence).

Social Environmental Factors Associated with Substance Involvement

In addition to individual factors and substance properties, physical and social environmental factors affect the risk for progression in the substance use process. Many older adults live alone or in rural communities with less interaction with others. This social isolation may make an individual vulnerable to developing a SUD as there are fewer restraints on use [40]. Isolated environments may also cause risky and problematic behaviors related to the substance use to go undetected and untreated. Changes in social networks and social roles (e.g., retirement) may also influence the progression of substance use problems. For example, substance misuse may be a coping mechanism to deal with the death of a spouse or other difficulties, such as family conflict or financial strain. Thus, elderly who have more chronic, ongoing sources of stress, coupled with a lack of social network supports and resources, maybe more likely to be excessive drinkers [41].

The environment, including policies and norms, often influences our attitudes and behaviors. Upon retirement, for example, one loses the constraint against substance use enforced via workplace policies and the cultural premise to not engage in these kinds of behaviors to uphold workplace safety and productivity [42]. Factors related to where one lives may also promote substance use or serve a protective function if others monitor behaviors. Binge drinking has been associated with living in neighborhoods with more adverse conditions [43]. Social events with alcohol, "sharing" of prescribed medications and other practices in group living environments may all increase the risk of substance use progression. In these settings, women and the most socially outgoing are likely to have high rates of consumption. The responsiveness to social conditions suggests that problem substance use among the elderly may well increase with the ageing of younger and more tolerant cohorts.

Societal messages can also impact the misuse of psychoactive substances. Media campaigns for prescribed medications

aimed at older populations could be encouraging adoption without considering long-term consequences or addiction potential [44-46]. Antidrug campaigns mainly target adolescents and young adults; perhaps by omission implying there is no problem among other sectors of the population like the elderly. The criminal stance taken by the judicial system against users also creates a strong social stigma.

The older adult often has sensory and cognitive deficits that make understanding medication instructions difficult, and they may fail to fully report symptoms and side effects. Miscommunication among providers and patients may contribute to prospects of misuse, as does the lack of coordination and follow-up of care. Care providers, as well as family, should closely monitor for signs of underlying causes or symptoms that encourage the misuse of psychoactive substances, such as disruptions of daily activities due to pain [47], sleep disturbances [48], and self-medicating with over the counter nonprescription substances [49]. Over the counter preparations contribute to many adverse interactions because many contain alcohol and they are not viewed as "drugs" [50]. This is especially troublesome because one half of all drugs taken frequently by the elderly can interact with alcohol [51]. Increased awareness of prescribing practices for older people and avoidance of certain medical practices may dampen the use and abuse of psychoactive substances that are contraindicated among the elderly [53]. Practices to avoid include: (1) prescribing medications without adequate diagnoses, (2) prescribing a drug at a higher dose and/or for a longer duration than recommended without adequate patient monitoring, (3) failing to provide adequate and comprehensible instructions for patients regarding proper use and side effects to expect and report, and (4) failing to determine alcohol consumption behaviors, the use of other substances with abuse potential, and the use of other medications that may interact with any newly prescribe medications. Older adults with certain comorbid disorders (including hypertension, diabetes, elevated lipids, and severe depression) and those taking medications that interact with alcohol (e.g., sedatives, anti-inflammatory drugs) should be told not to use alcohol.

Recommendations: What can we do as practitioners?

Practitioners need to recognize that treatment of alcohol and substance with elderly clientele can positively affect health outcomes. Increased attention and dialogue related to current lifestyle, including alcohol and substance use assist in building therapeutic relationships, increase levels of trust, and enhance validation of actual health risk inventories. When practitioners are understanding and supportive the client's defensiveness is decreased. A Get Connected Toolkit is available to help organizations undertake health promotion, advance prevention messages and education, and undertake screening and referral for the misuse of alcohol and medications as well as mental health issues for practitioners and staff working with older adults [54].

Furthermore, all patients should be screened for alcohol, illicit drug use and prescription abuse or misuse during

any general physical examination. The assessment of older people with substance misuse is complex and requires skills to make a joint assessment of both physical and mental health as well as functional status and social support. Practitioners should not be afraid to ask about substance use involvement frequently and screen those at higher risk more often. At minimum, practitioners should implement the national guidelines for alcohol use [55]. Age-appropriate consumption levels for individuals over 65 are no more than one alcoholic beverage a day. The guideline also indicates a maximum of two drinks on special occasions and even lower limits for women. The standard drink sizes are also critical in proper assessment. According to the national guidelines the limits are 12 ounces of beer; 1.5 ounces of hard liquor; 5 ounces of wine; or 4 ounces of sherry, liquor or aperitif. It is imperative that practitioner and patient are using the same definitions, i.e. a 20 ounce beer is not equivalent to a 40 ounce malt liquor. In patients who report substance use, practitioners should inquire about frequency and amount, tolerance and withdrawal symptoms, attempts to reduce use, and substance-related harms.

There are several alcohol screening assessment tools that may be used to identify elderly at highest risk – those drinking at levels linked with negative outcomes for physical and mental health. However, there is a lack of screening tools for prescription and other types of substance use among older people. The CAGE questionnaire was created to detect the core features of alcohol dependence [56], albeit a lifetime history, but it is insensitive to harmful/hazardous drinking and does not capture current alcohol use. The Alcohol Use Disorders Identification Test (AUDIT) can screen for heavy drinking but the cut points need to be tailored for the elderly [57]. The Michigan Alcoholism Screening Test-Geriatric version (MAST-G) which includes elderly-specific consequences is among the most widely used age appropriate tool in outpatient settings to detect "at-risk" alcohol use [58]. Toxicology testing and using biomarkers to detect recent alcohol use also offer opportunities to detect substances that directly affect treatment [59].

Proper assessment, diagnosis and treatment interventions can prevent physical and emotional decline in the elderly population. In a review of existing treatments for substance abuse among the elderly, treatment (whether age-specific or mixed-age) yielded abstinence rates comparable to the general population and younger cohorts [60]. Positive outcomes for older adults have been seen for several evidenced-based treatment interventions, such as cognitive behavioral therapy, motivational interviewing, brief interventions as well as brief advice [60].

Practitioners should offer all elderly patients with identified alcohol or drug misuse education and supportive, non-judgmental counseling. We should provide even greater attention to problematic use by focusing on the health effects of use and set mutual goals of either abstinence or use reduction. Be realistic and follow up regularly as done with other chronic health issues. Provide practical individualized

strategies to reduce use. Evaluate developmental stressors related to recent losses, history of substance dependency, mood disorders or cognitive impairments. Assess the individual's ability to take medications as prescribed. Incorporate simple motivational interviewing techniques into the counseling sessions. Point out discrepancies between individual goals and behaviors directly to the patient. Refer those patients who are unable to reduce use or who are experiencing harms from use to specialized care, while ensuring those patients remain connected to the primary care provider. Information on the risk of developing problems should be given to all users. A free pamphlet is available at <http://store.samhsa.gov/product/As-You-Age-A-Guide-to-Aging-Medicines-and-Alcohol/SMA04-3940> [61].

Discussion

In summary, not all individuals are equally vulnerable to the development of substance use disorders. In general, the use and misuse of alcohol and illegal drugs declines with advancing age [41,62]. However, older adults are frequent users of prescribed and over-the-counter medications, which have significant abuse potential especially if use increases overtime or when used in greater quantity or in a manner not prescribed [22,23,49]. Progression to misuse and substance use disorders can be influenced by individual-level susceptibility (e.g., physiological changes and genetic vulnerability), properties of the substance (e.g., reinforcing properties), and social environmental factors (e.g., prescribing practices). Table 1 summarizes many of the factors discussed in this paper.

All older patients should be screened for alcohol, illicit drug use and prescription abuse or misuse during any general physical examination. Practitioners should offer all elderly patients with identified alcohol or drug misuse education and supportive, non-judgmental counseling. Given the impact of substance use problems in older people there is a need for increased awareness and understanding of the substance use progression process in older adults.

Table 1. Factors that may contribute to the misuse and progression of substance use to disorders among the elderly

- Family history of substance use disorders.
- History of a substance use disorder and/or concurrent substance use.
- Cognitive impairment and change.
- Poor health (chronic pain, disabilities, sensory deficits).
- Insomnia.
- Previous and/or concurrent psychiatric co-morbid-

ities (i.e., depression, suicide).

- Change in social status (retirement, loss of role).
- Bereavement.
- Stress and/or reduced coping skills (family conflict, financial resources).
- Reduced activity (loss of mobility/ability to function, boredom).
- Social isolation (living alone, loss of family & friends, living in a rural area).
- Properties of the substance (use of multiple substances).
- Non-medical use and dangerous prescribing practices.
- Lack of coordination and follow-up care.
- Social stigma and lack of awareness.

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